

Doc Code: AP.PRE.REQ

PTO/SB/33 (07-09)  
Approved for use through 07/31/2012. OMB 0651-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) 64223(52059)									
	Application Number 10/552,640-Conf. #9136	Filed October 7, 2005									
	First Named Inventor Peter Kammerhofer et al.										
	Art Unit 1621	Examiner Katakam, Sudhakar									
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p> <p>I am the</p> <table><tbody><tr><td><input type="checkbox"/> applicant /inventor.</td><td>_____ /Nicholas J. DiCeglie, Jr./ Signature</td></tr><tr><td><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)</td><td>_____ Nicholas J. DiCeglie, Jr. Typed or printed name</td></tr><tr><td><input checked="" type="checkbox"/> attorney or agent of record. Registration number 51,615</td><td>_____ (212) 308-4411 Telephone number</td></tr><tr><td><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34. _____</td><td>_____ February 10, 2010 Date</td></tr></tbody></table> <p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.</p> <p><input type="checkbox"/> *Total of 1 forms are submitted.</p>				<input type="checkbox"/> applicant /inventor.	_____ /Nicholas J. DiCeglie, Jr./ Signature	<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)	_____ Nicholas J. DiCeglie, Jr. Typed or printed name	<input checked="" type="checkbox"/> attorney or agent of record. Registration number 51,615	_____ (212) 308-4411 Telephone number	<input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34. _____	_____ February 10, 2010 Date
<input type="checkbox"/> applicant /inventor.	_____ /Nicholas J. DiCeglie, Jr./ Signature										
<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)	_____ Nicholas J. DiCeglie, Jr. Typed or printed name										
<input checked="" type="checkbox"/> attorney or agent of record. Registration number 51,615	_____ (212) 308-4411 Telephone number										
<input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34. _____	_____ February 10, 2010 Date										

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4).

Dated: February 10, 2010  
Electronic Signature for Nicholas J. DiCeglie, Jr.: /Nicholas J. DiCeglie, Jr./

Docket No.: 64223(52059)  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
Peter Kammerhofer et al.

Application No.: 10/552,640

Confirmation No.: 9136

Filed: October 7, 2005

Art Unit: 1621

For: APPARATUS AND PROCESS FOR THE  
PRODUCTION OF VINYL CHLORIDE BY  
THERMAL CRACKING OF 1,2-  
DICHLOROETHANE

Examiner: Katakam, Sudhakar

**REMARKS/ARGUMENTS IN SUPPORT OF  
PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Applicants are in receipt of the final Office Action dated December 10, 2009(the "Office Action"), and now request review of the Office Action. A Notice of Appeal is filed herewith. The following remarks support Applicants' "Pre-Appeal Brief Request for Review" filed herewith. These remarks do not exceed five pages, do not present amendments, and are being filed with a Notice of Appeal, thereby satisfying the requirements for review.

**The Office Action**

In the Office Action, Claims 4-10 and 12-15 stand rejected under 35 USC §103(a) over Link et al. (US 4,822,932) in view of Dummer et al. (US 4,822,932). The Office Action states that Link et al. teaches a method of production of vinyl chloride by thermal cracking of 1,2-dichloroethane in a cracking furnace along with successive external heat exchangers and burners. The Office Action further states that Link et al. fails to disclose a heat exchanger that is not externally heatable and separately regulatable.

The Office Action states that Dummer et al. teaches the heat exchanger and an analogous process.

The Office Action further states that the comparative data and unexpected results presented in the Declaration under 37 C.F.R. §1.132 of Dr. Michael Benje are not unexpected because the modifications are within the purview of the skilled person of the art.

Clear Error and/or Omission in the Final Office Action:

The Link reference does not render the present claims obvious in view of Dummer

As discussed in the Response of August 10, 2009, Applicants submit that the Examiner has failed to establish a *prima facie* showing of obviousness because one of ordinary skill in the art would not have been motivated to combine the teachings of Link and Dummer. Even if the Examiner had established a *prima facie* showing of obviousness, Applicants submit that one of ordinary skill in the art would not have had any reasonable expectation of success in achieving the surprising and unexpected results of the instant invention.

The instant invention pertains to a process for the production of vinyl chloride by thermal cracking of 1,2-dichloroethane in a cracking furnace in which a medium pressure of from 1.4 to 2.5 MPa is maintained in the system. Further, an externally heatable and separately regulatable heat exchanger is provided which allows for the prevention of pressure and temperature fluctuation in the system.

Applicants respectfully redirect attention to the Declaration by Dr. Michael Benje, of Uhde GmbH, having expertise in EDC and VCM technology and inventor of several patents relating to the production of vinyl chloride.

According to the Declaration, Dr. Benje notes that Link et al. is directed to a process for the production of vinyl chloride by thermal cracking of 1,2-dichloroethane wherein the thermal energy of the cracking gas (i.e. the gas leaving the cracking furnace) is utilized to heat liquid 1,2-dichloroethane in a heat exchanger. This heat exchanger according to Link et al. corresponds to the EDC vaporizer 4 as shown in Figure 1, sheet A of the present application. This heat exchanger which is used according to Link et al. is not externally heatable and separately regulatable. Therefore, pressure and temperature fluctuations in the system according to Link et al. can not be prevented.

Both Applicants and Dr. Benje note that the formation of by-products is significantly lower in the process according to the present application when compared with Link et al. (See Table on page 5 corrected version). Similarly, the furnace operating time between cleaning periods is nearly twice as high for the process according to the present application when compared with the process according to Link et al.

Dr. Benje further notes the cleaning of the furnace takes up to two weeks and therefore, the furnace operating time has a significant influence on the output and the productivity of a process. In the present case, two weeks correspond to a loss of productivity of 2.5%. In total 35 million tons of vinyl chloride are produced every year. Therefore, in the production of a product at such a large scale, an increase in the productivity of even a few percent has a very significant influence on the overall costs of the final product.

As such, one of ordinary skill in the art would have lacked any reasonable expectation of success in achieving the surprising and unexpected results of the instant invention with the non externally heatable and separately regulatable heat exchanger of Link et al.

The Office Action contends that Dummer et al. teaches an analogous process using a quench column and an external heat exchanger. Applicants respectfully submit that Dummer et al. does not rectify the deficiencies of Link et al.

Indeed, *Dummer et al.* does not deal with the cracking process itself but merely *relates to the technology after the quench column*. Indeed, the heat exchangers mentioned by the Examiner (14, 16, and 21) are each located *downstream from the quench column*. As such, the heat exchanger of Dummer et al. has no effect on the EDC before or during cracking. Therefore, at best, Dummer et al. suggests the use of an externally heatable and separately regulatable heat exchanger only *after the cracking process is complete*.

Even if one of ordinary skill in the art were to utilize a post quench column heat exchanger as in Dummer et al., there would have been no motivation to modify the non externally heatable and separately regulatable heat exchanger of Link et al. before the cracking process and still no reasonable expectation of success in achieving the results of the instant invention.

With regard to the surprising and unexpected results of the instant invention, Dr. Benje provides a tabular presentation which clearly demonstrates that the method according to the present application makes it possible to obtain decisive advantages of low-pressure-cracking, a high yield, a low rate of by-product formation and a long operating time of the furnace combined with a low-energy consumption that bears comparison with high-pressure cracking. Similarly, Dr. Benje demonstrates a considerable cost advantage associated with the present application when compared to the processes of the prior art. Applicants believe that the data provided more than sufficiently demonstrates the superiority of the instant invention.

### **CONCLUSION**

In sum, Link et al. alone or in combination with Dummer et al. do not render the claimed invention obvious. There is no suggestion or motivation, either in the cited reference(s) or in the knowledge generally available to one of ordinary skill in the art, to modify the cited reference(s) to make the claimed invention, nor is there a reasonable expectation of success. Furthermore, the superiority of the present invention further rebuts any prima facie case of obviousness asserted.

Applicants respectfully request reconsideration and withdrawal of the rejections of Claims 4-10 and 12-15.

For at least the foregoing reason, Applicants contend that the rejections of record should be withdrawn, and that the present application is in condition for allowance. Early and favorable consideration of the application is earnestly solicited.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105, under Order No. 64223(52059).

Dated: February 10, 2010

Respectfully submitted,

Electronic Signature:

/Nicholas J. DiCeglie, Jr./

Nicholas J. DiCeglie, Jr.

Registration No.: 51,615

Edwards Angell Palmer & Dodge LLP

P.O. Box 55874

Boston, Massachusetts 02205

(212) 912-2907

Attorneys/Agents For Applicant

Customer No. 21874